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RESEARCH ARTICLE

Guidelines to build the bridge between sustainability and integrated management systems: A way to increase stakeholder engagement toward sustainable development

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Abstract

The balanced development and management of sustainability demands the alignment of Corporate Sustainability (CS) strategy with management systems so that sustainability can be effectively inserted into all organizational levels and thus promote stakeholder engagement. Therefore, to support the development of CS, the structure, processes, indicators, and instructions of Integrated Management System (IMS) can be used. This study aims to propose guidelines for the alignment of CS and IMS, based on the cross analysis of seven case studies. This objective was achieved through the identification of elements that can positively or negatively impact the alignment of CS with the IMS, which served as the basis for proposing the guidelines to build a bridge for CS development from the IMS. This work brought as a scientific contribution the upgrade of the block of knowledge on the contributions between IMS and CS, bringing some validation of knowledge from scientific articles in the real context of industrial companies, and additions and refinements to the state of the art on the subject. In addition, the applied contribution of the results stands out, which will provide managers with a framework to intervene in organizations with structural modifications that will make them greener, socially appropriate and more profitable, thus promoting the achievement of the global goals of sustainable development proposed in Agenda 2030.

KEYWORDS
corporate social responsibility, management systems, stakeholder engagement, sustainability strategy, sustainable business, sustainable development

1 | INTRODUCTION

Organizations have negative impacts on the most diverse systems that make up the environment and society and are the result of physical, chemical, biological, and human interactions necessary for the delivery of their products and services (Oliveira, 2013; Rebelo et al., 2016; Santos et al., 2020; Vieira et al., 2019; Zgodavova et al., 2020). Surrounded by this scenario, companies in several countries must meet increasingly high social and environmental requirements to contribute to the Sustainable Development (SD) of the planet in the short, medium, and long term (Cazeri et al., 2018; Pechancová et al., 2019). It is necessary to join lean and green (Cordeiro et al., 2020; Rodrigues et al., 2019; Rodrigues et al., 2020; Silva et al., 2020; Teixeira et al., 2021; Teixeira et al., 2022) toward a Circular Economy (Ramos et al., 2022).

The Brundtland Report (Our Common Future) conceptualizes SD as one that meets current needs without compromising the ability of future generations to meet their needs (WCED, 1987). Achieving

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sustainability, however, is a challenge since most economic activities are unsustainable in view of their considerable impacts on the planet and society (Büyüközkan & Karabulut, 2018). For example, economic growth at the cost of using energy and raw materials far above the planet's natural capacity to recover has intensified the increase in average global temperature, sea level, ocean acidification, deforestation, soil, water, and air pollution, among other negative environmental impacts (Scott & McGill, 2019).

These impacts are commonly characterized in economic, social, and environmental impacts, following the logic of the Triple Bottom Line (TBL), which is one of the most widely used approaches to illustrate and operationalize Corporate Sustainability (CS). TBL aims to promote the balanced development of environmental, social, and economic spheres in organizations to generate more sustainable outcomes (Dawodu et al., 2017; Farooq et al., 2021; Nunhes et al., 2021; Santos et al., 2014; Talapatra et al., 2019). Among the challenges of the economic sphere, we highlight the retention of intellectual capital, sustainable costs and profit margin, a competitive innovation index in the long term and the alignment of the economic concept with the concepts of natural and social capital. In the environmental sphere, it is important to mention the existence of two sources of natural capital: critical natural capital, essential for maintaining life and the continuity of ecosystems; and renewable natural capital, which can be repaired as the recovery of a desert or replaced as fossil energy by solar energy. As for the social sphere, it covers human capital from the perspective of public health, skills, and education to the capacity to generate wealth (Elkington, 1997). Thus, companies are constantly challenged by their stakeholders to adopt initiatives that enable them to manage the elements of sustainability and integrate them into their strategies and operations (Khanal et al., 2021; Murmura et al., 2021; Pechancová et al., 2019; Rebelo et al., 2015; Ribeiro et al., 2017; Santos et al., 2017).

Nunhes et al. (2020) presented six pillars for CS management, being: corporate sustainability strategy, corporate governance, human resource management, knowledge and innovation management, measurement, disclosure, and independent assurance, and management systems, and integrated management systems. Management Systems (MSs) can contribute significantly to the sustainability management of any type of company if they are implemented consciously and efficiently (Crous et al., 2021; Dragomir, 2017; Fonseca & Carvalho, 2019; Santos-Jaén et al., 2021).

MSs are composed of a set of objectives and procedures for managing a certain element, for example, quality, environment, CS, health, and safety of workers, innovation, information security, etc. (Barbosa et al., 2021; Costa et al., 2019; Pechancová et al., 2019; Rebelo et al., 2014; Sá et al., 2019). However, as there is a need to implement an increasing number of management systems to meet the expectations of their stakeholders, many companies have faced problems keeping several MSs separate (Mubushar et al., 2021; Nunhes et al., 2017; Sá et al., 2020; Santos et al., 2021). To overcome these difficulties, an efficient management structure, known as the Integrated Management System (IMS), began to be used. IMS most commonly covers the integration of the Quality Management System (QMS), Environmental Management System (EMS), and Occupational Health and Safety Management System (OHSMS). In IMS, there is the integration of several common elements of the MSs. The most common elements that can be integrated into an IMS are recommended by Nunhes et al. (2017) and Santos et al. (2011)—which allows achieving greater efficiency in the management of human, technical, material and financial resources to meet the needs of the different stakeholders (Bravi et al., 2020; Dragomir, 2017; Nunhes et al., 2019).

The worldwide success of the standards commonly used in the integration of MSs ISO 9001, ISO 14001, and ISO 45001 coupled with the need to effectively insert and develop the business strategy in the processes and operations of the organization. It has fostered the creation of several other management standards and guidelines oriented to different management aspects, such as risks (ISO 31000 guidelines), corporate social responsibility (ISO 26000 guidelines, SA 8000 certification, Global Reporting Initiative guidelines, B Corp certification), innovation (ISO 56002 guidelines), information security (ISO 27001 certification), and energy (ISO 50001 certification) (Barbosa et al., 2018; Boiral & Henri, 2017; Dragomir et al., 2017; Fonseca et al., 2021; ISO, 2020). Only ISO has published more than 22,000 International Standards that play a key role in achieving all the SDGs by providing guidelines and frameworks that support the three pillars of sustainable development, from employee health and well-being to energy consumption, to resilient and eco-friendly infrastructures (ISO, 2018). Also according to ISO, an IMS that includes quality (ISO 9001), environment (ISO 14001) and occupational health (ISO 45001) perspectives enables organizations to contribute to 16 of the 17 SDGs (ISO, 2018). Then, in this study the IMS will cover at least these MSs.

Generally, companies that adopt various management standards and guidelines prefer integrated systems management and have greater involvement in CS development (Dragomir, 2017; Nunhes et al., 2016; Siva et al., 2016). They adopt procedures for external verification and audits of their activities and systems, reporting their results publicly through sustainability reports (Fonseca & Carvalho, 2019). For the development of sustainability reports, there are three commonly used frameworks: Global Reporting Initiative (GRI) standards, International Integrated Reporting Council (IR) framework, and Sustainability Accounting Standards Board (SASB) guidelines. All these structures are considered globally relevant, but they differ in their purpose: while the GRI seeks communication with various stakeholders, IR focuses on creating shared value between them, and the SASB, in turn, prioritizes communication with investors. Of these structures, the GRI standards are the most used for sustainability reporting globally (Landrum & Ohsowski, 2018).

The balanced development and management of economic, social, and environmental sustainability demand the alignment of CS strategy with management systems so that sustainability can be effectively inserted into all organizational levels (Lüdeke-Freund et al., 2018; Nunhes et al., 2020). Nunhes and Oliveira (2018) pointed out that the use of IMS for CS development should be explored in future studies. Corroborating the suggestion of Nunhes and Oliveira (2018), Poltronieri et al. (2019) evidenced in Brazilian companies, regardless of their size, that the greater the degree of maturity of IMS, the better

the performance in sustainability. According to the authors, the higher the level of integration of IMS, the higher the contribution of MSs to good sustainability performance. Therefore, it is relevant and necessary to continue deepening the study of the interconnection between CS and IMS because the exploration of this relationship has been presenting positive results that confirm the importance of readjusting the management strategies of organizations in favor of sustainable development.

Therefore, the structure, processes, indicators, and instructions of the IMS can support the development of CS (Klute-Wenig & Refflinghaus, 2015). Thus, it is notable that more studies on the insertion of sustainability at various organizational levels are needed. In most cases, the information, elements, and practices of EM are not yet adequately utilized. It is due to managers' lack of knowledge about the synergies and benefits that are possible from the development of this relationship (Witjes et al., 2017).

Based on this, the research question that guided the development of this work was established: how is it possible to allow IMS to contribute to sustainability and vice-versa aiming at fostering their synergies and minimizing their dissonances in organizations? Thus, this study proposes, based on the cross-analysis of seven case studies in Ibero-American companies, considering scientific theory, and the author's expertise, guidelines for the alignment of CS and IMS. This objective was achieved through the identification of synergistic and dissonant elements that can positively or negatively impact the alignment of CS with the IMS, which served as the basis for proposing the guidelines to build a bridge for CS development from the IMS.

The novelty of this work is the updating of the scientific block of knowledge on the themes CS and IMS, from a transnational analysis in Ibero-American companies (Brazil, Portugal, and Spain). Thus, it was possible to perform the empirical analysis of the theoretical results identified in the literature and the addition of new knowledge to the state of the art on the subject.

In the following section, details on the research method used are presented, and in Section 3, the results and discussions are given. In Section 3.1, the characterization of the companies studied is performed, in Section 3.2, synergies and dissonances are identified, and in Section 4, the guidelines for the alignment of CS with IMS are presented considering the literature and case studies. Finally, Section 5 presents the conclusions and suggestions for future research.

2 | RESEARCH METHOD

The methodological flow according to which this study was developed is shown in Figure 1.

Following Figure 1, the first step to conduct this research was the establishment of the topic, justification, research question, and objectives, that from the identification of gaps and scientific relevance on the subject were defined. After establishing the research project, the theoretical framework (step 2) was developed with a focus on the relationships between IMS and CS.

The planning of the case study procedures (step 3) was developed to ensure the quality of the case study results in the adoption of the following procedures: replication logic in multiple case studies; case study protocol; multiple sources of evidence; draft of the case study reports by key informants; and database for the collected data (Yin,

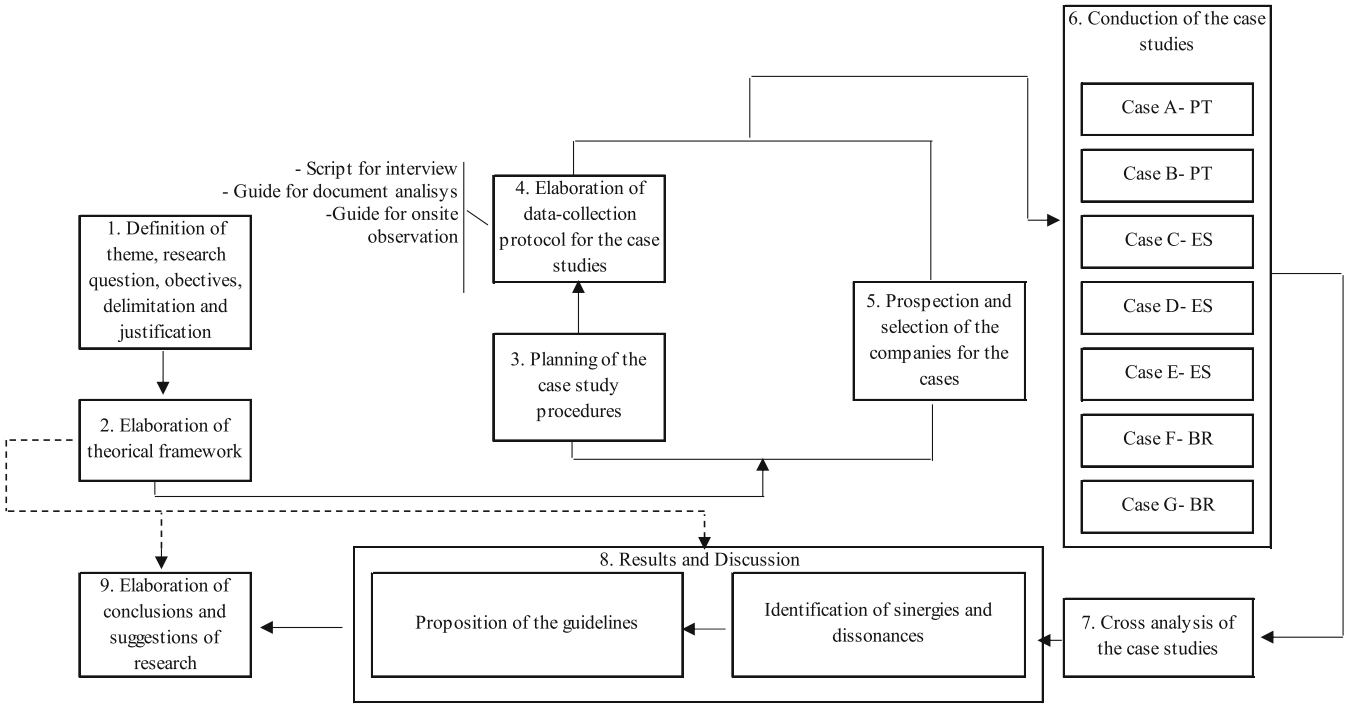
6. Conduction of the case studies
Case A- PT
Case B- PT
Case C- ES
Case D- ES
Case E- ES
Case F- BR
Case G- BR
- Script for interview
- Guide for document analisys
-Guide for onsite observation
4. Elaboration of data-collection protocol for the case studies
1. Definition of theme, research question, obectives, delimitation and justification
3. Planning of the case study procedures
5. Prospection and selection of the companies for the cases
2. Elaboration of theorical framework
8. Results and Discussion
9. Elaboration of conclusions and suggestions of research
Proposition of the guidelines
Identification of sinergies and dissonances
7. Cross analysis of the case studies

FIGURE 1 Methodological flow of the research

2015). The adherence of the study to these procedures is explained throughout this section.

The data collection protocol (step 4) for case studies was designed to identify good practices and difficulties in implementing CS and IMS as isolated elements because companies, in general, are unaware of CS's contributions to IMS and vice versa, although they do exist. The framework of guiding principles of CS (Nunhes et al., 2020) and guiding principles of IMS (Nunhes et al., 2019) supported the structuring of the data collection protocol of the case studies, which is an important instrument to improve the reliability and validity of the information collected (Miguel & Souza, 2012). Also, based on the references used in the theoretical framework, the synergies, and dissonances between IMS and CS were included in the data collection protocol. Appendix A presents the data collection protocol (Tables A1–A6).

Multiple case studies were conducted in companies with outstanding sustainability strategies. All the companies should meet these selection criteria (step 5): be industrial companies with at least two management systems; publish each year a sustainability report and have operations in Ibero-American countries. According to a study conducted by KPMG (2017), Brazil, Portugal, and Spain are part of the "leading the quadrant pack" of companies that most have been publishing sustainability reports for a decade. Hence, the expressive number of companies engaged in sustainable development in these countries, added to the lack of scientific articles focused on sustainability assessment in companies operating in Ibero-American countries, justifies the relevance of choosing Brazil, Portugal, and Spain as study variables. More details on the characterization of the studied companies, such as the number of employees and annual average invoicing are presented in Section 3.1.

For Stravos and Westberg (2009), multiple case studies provide researchers with a rich set of data due to simultaneity, involving multiple sources of evidence and various situations, thus making the study more robust. The purpose of conducting multiple case studies (step 6) was to identify how the main practices related to sustainability and IMSs are developed and maintained, what are their characteristics, their main difficulties are, and how they could relate to each other.

The analysis of documents, on-site observation, and interviews was used as sources of simultaneous evidence to collect data in the companies, triangulating the information obtained to support a solid interpretation of the reality studied (Yin, 2015). In this phase, documents related to IMSs and sustainability were analyzed, such as sustainability reports; manuals, policies, and procedures for the areas of environment, quality, occupational health and safety, R&D, and human resources, etc.

The on-site observation was conducted by visiting the production plants and the sectors responsible for the IMS and sustainability. About interviews, they were conducted with those responsible for sustainability and IMS, and, when it was possible, the responsible for the human resources department and, if applicable, the responsible for other separated management systems. In addition to these, in companies A, B, and C some employees below the top management responsible for these departments were also interviewed to better understand the real situation from different points of view. In companies D, E, F, and G, the interviews were conducted remotely via the internet due to the COVID-19 pandemic. For this reason, in these cases, priority was given to conducting interviews with key research agents, that is, those responsible for IMS and CS. The data collected in the companies was analyzed in the light of the literature presented in the data collection protocol and based on the experiences of the authors of this study on the subject.

The cross-analysis of the cases (step 7) aimed to highlight and compare the characteristics and elements of IMS and CS of the companies studied. These applied results allowed to identify and discuss in the light of the scientific literature on CS and IMS the synergies and dissonances in developing and maintaining CS and IMS (Section 3.2). The literature review and the multiple case studies added to the author's experiences based in Section 4 the proposition of the guidelines to foster the synergies and mitigate dissonances between the elements studied (step 8, see Figure 2).

Based on the results, it was proposed in Section 4 guidelines to foster the synergies and mitigate dissonances between the elements studied (step 8). Finally, based on all previous results, both theoretical and applied, the conclusions of the paper were drawn up.

3 | RESULTS AND DISCUSSIONS

This section first presents information about the seven companies studied (Section 3.1). Based on the results of the case studies, the synergies and dissonances between the topics studied were identified and verified considering the literature (Section 3.2). The synergies and dissonances supported the proposal for guidelines for aligning CS with IMS (Section 4).

3.1 | Characterization of the studied companies

The names of the companies participating in the case studies are not disclosed to guarantee their confidentiality. The companies studied were then identified by letters in sequence from A to G. The characterization of each of them is presented in Tables 1 and 2.

According to OECD (2020), all companies listed in Table 1 can be classified as large because they each employ 250 or more people. Company A is Portuguese, and its main activity is to design, develop and supply transformers, equipment, and infrastructure management solutions for industrial installations, hydroelectric, thermoelectric, mini-hydro and cogeneration plants, wind farms, substations, railway systems, among others. Company A was founded in 1905 in the north of Portugal.

Company B is also located in the north of Portugal, but it has the head office in England. Company B produces corrugated cardboard packaging and the unit studied was founded in 1974. Company C acts in the pharmaceutical segment and was founded in 1929 in Spain, the same location as the unit studied. Its activities cover the entire life cycle of the drug from the discovery and development of new drugs to manufacturing and marketing.

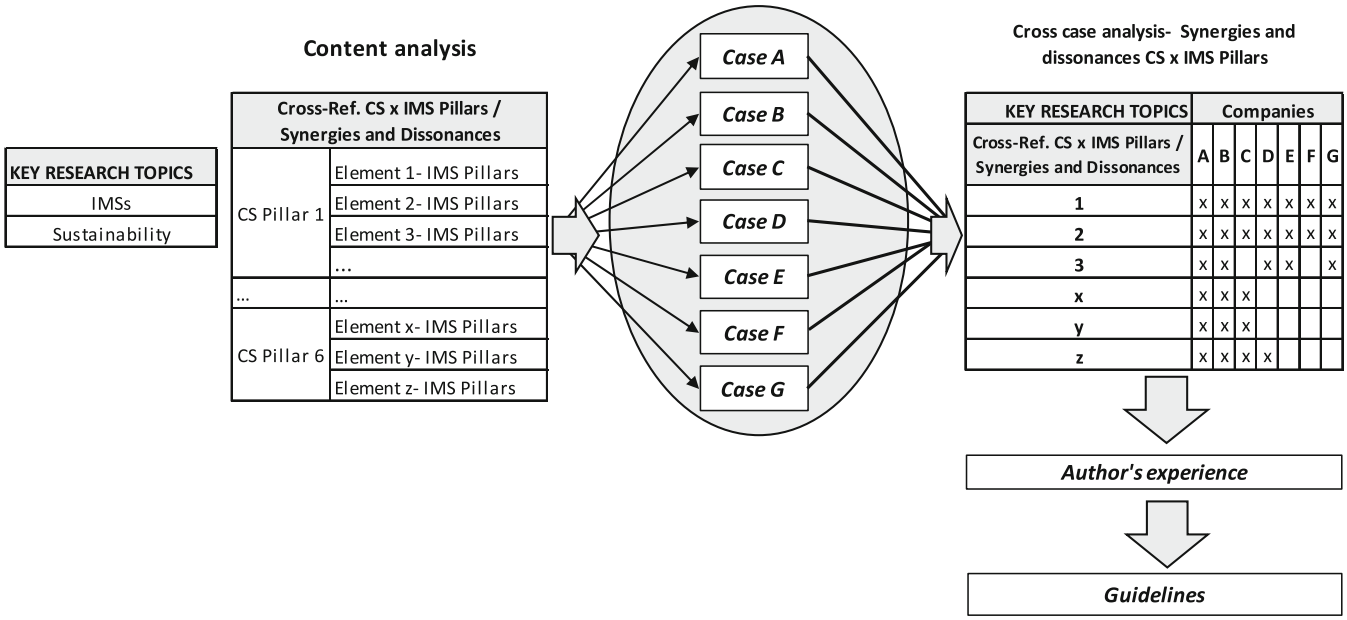

FIGURE 2 Elaboration of the guidelines

TABLE 1 General characterization of the studied companies

Characterization	Company A	Company B	Company C	Company D	Company E	Company F	Company G
Location	Portugal	Portugal	Spain	Spain	Spain	Brazil	Brazil
Group's annual average invoicing (€)	500 million	300 million	813 million	113 million	87 billion	428 million	84 billion
Number of employees (unit studied)	2000	380	1700	2359	4500	3500	1000
Industrial segment	Energy and mobility	Paper and pulp	Pharmacy	Food and beverage	Food and beverage	Automotive and industrial supplier	Chemical

TABLE 2 Systems that compose the IMS of the studied companies

Company	QMS ISO 9001	EMS ISO 14001/EMAS	OHSMS OHSAS 18001/ISO 45001	Energy MS ISO 5001
A	√	√	√	
B	√	√	√	√
C		√	√	
D	√	√		
E	√	√		
F	√	√	√	√
G	√	√	√	√

Company D belongs to the food sector and was founded in 1876 in the region of Catalonia and is present in more than 120 countries. Company E is a leading global food company founded in 1866 in Switzerland, is present in 187 countries and was introduced in Spain in 1905.

Headquartered in Germany, company F started its activities in Brazil in 1983. Company F is a manufacturer of automotive, aerospace, and industrial components, specifically components and systems in engine, transmission, and chassis applications rolling and plain bearing. Company G operates in the chemical sector, it is present in Brazil since 1959 and is also headquartered in Germany. Company G has several types of business including petrochemicals, performance materials, monomers, industrial solutions, surface technologies, chemicals, and agricultural solutions.

Companies A, C, and G started the CS strategy around the 2000s, while companies B, D, E, and F formally started in mid-2015. The latter declared that they were influenced by Directive 2014/95/EU, which has been obliging European companies with more than

500 employees since 2017 to account for their non-financial information (environmental, social, and governance). All the companies publish their sustainability reports annually following the GRI guidelines. Table 2 presents the management systems that compose the IMS of the studied companies.

As shown perspective Table 2, there are various MSs standards such as ISO 9001, ISO 14001, ISO 45001, etc. forming the basis of the IMS in the companies studied, however, in addition to these MS standards the IMS of each one is customized to meet specific important sector standards according to the nature of the business, for example, the FSC (Forest Stewardship Council) is used in company B and the European Water Stewardship (EWS) in company G. Companies A, D and F keep separated from IMS, respectively, the management system for NP 4457 (Research, Development, and Innovation); various food standards; and QMS ISO 9001, IATF 16949 and VDA 6.1 (quality standards for the automotive sector). All companies studied have had IMS developed for at least 6 years.

3.2 | Synergies and dissonances between CS and IMS: Cross-analyses and discussions

The presentation and discussion of the cross-analysis of the cases follow the structure of the pillars CS (Fonseca & Carvalho, 2019) and the pillars of IMS (Boiral & Henri, 2017). The case studies allowed identifying 43 synergies and 15 dissonances between CS and IMS, which are presented and discussed in this section considering the literature. The tables containing the synergies and dissonances can be consulted in the Appendix A of this paper.

In all companies studied, governance is responsible for defining policies to identify and engage stakeholders. It was observed that companies A, B, D, E, and G have a single committee to jointly address CS and IMS issues at governance board meetings. However, it is up to the board of directors to adhere or not to the systemic and integrated management of resources, without which it is difficult developing sustainable practices (Nunhes et al., 2020). All the companies studied have difficulties in using the results of materiality analysis as input for continuous improvement of IMS. In this sense, one of the main dissonant aspects in the alignment of CS with IMS highlighted by companies A, B, and C was the different time perspectives adopted for each of them. For the development of the CS, the companies studied tend to focus more on medium and long-term actions, while the IMS development actions are more directed to short and medium-term planning.

Corroborating the findings of Nunhes et al. (2019); Tate & Bals (2016), all companies agreed that IMS synergically contributes with important information to the definition of the CS strategy. Both the CS manager and the IMS manager constantly monitor the conflicts that arise due to the transversality of these two areas. Another synergistic strategy observed in companies A, B, C, and G is the creation of IMS internal standards to support sustainability integration throughout the organization. For instance, as for IMS, it is possible to standardize criteria, definitions, and KPIs for sustainability management (Büyüközkan & Karabulut, 2018; Nunhes et al., 2019).

Companies A, D, F, and G declare to apply IMS best practices in the CS area to simplify and cut red tape in sustainability activities (Asif et al., 2011). Due to the global crisis that has affected the production of companies C and D, both companies foresee difficulties in balancing the focus between economic recovery and sustainable development. Another synergistic aspect between the themes is the implementation of the CS strategy and IMS, which need the support of top management for their implementation.

HR management has a significant impact on sustainability in companies C, D, and F, since the person responsible for sustainability transmits CS information directly to human resource management, which takes the issues considered relevant for the discussion on the board. This makes it difficult to integrate sustainability into the company strategy, which is dependent on the approval of the HR sector. The HR team conducts internal campaigns to disseminate topics related to both sustainability and IMS (Delai & Takahashi, 2013; Rebelo et al., 2014). Although it is a synergic aspect, the training is given separately in companies C, D, E, F, and G, not interconnecting the CS projects with IMS and vice versa. All the companies studied showed the predominance of employees of the male gender, especially in leadership positions, and that all of them assumed the objective of increasing gender diversity, establishing medium-term goals. In addition, the HR team of company D periodically promotes a meeting point with the company's employees to spread information on all human resource projects.

Companies A, D, E, and G develop transversal projects of circular economy and digital transformation. Companies A and D maintain a department of innovation that develops innovation initiatives for the sustainable development of products and processes. Innovation management is kept separate from IMS in these two companies because innovation has its own processes that are not aligned with the IMS processes; nevertheless, in both cases, the environmental management area of IMS provides significant support to R&D processes, which in all companies are focused on obtaining environmental improvements to stimulate the circular economy.

The innovation management system of company A and the integrated environment and safety management of company G contributes to the development of the social pillar through the implementation of ideas and technologies that promote the well-being and health of employees (company A) and the value chain (company G).

Companies A, E, F, and G stated that the knowledge achieved with IMS gave full support for the early development of sustainability management, assisting, for example, the creation of audit processes, process and document management, performance evaluation, continuous improvement, etc. On the other hand, companies B, C, and D, informed that there is no integration or sharing of best practices between CS and IMS.

Nevertheless, companies A and F recognize that they should improve the monitoring and measurement of sustainability, as they have currently identified the indicators, but have not defined targets for each of them, which compromises the monitoring and improvement of the sustainability strategy. The sustainability managers of these companies explain that the definition and monitoring of CS goals depend on the dialog and exchange of information between

various corporate and operational areas and that this difficulty reflects the need for greater synergy and integration of sustainability with the different levels and organizational areas. All the companies studied found that the performance evaluation of the IMS itself cannot demonstrate CS performance (Büyüközkan & Karabulut, 2018).

As previously mentioned, some elements of the business have their management structure separated from IMS and CS. For example, in addition to the already mentioned examples of A and D companies, which maintain innovation management separate, company D has food safety management separate and company D has quality management separate. IMS makes it possible to create routines to integrate CS into processes through the standardization of terms, tools, and processes. All companies highlighted that the revision of ISO standards from 2015 brought an integrative structure for MSs, which contributed to the integration of sustainability in products and processes from a more strategic approach for MSs.

Among the changes related to Annex SL that most impacted sustainability one can highlight the analysis of the organization and its context (clause 4.1), understanding of stakeholders' needs and expectations (clause 4.2), emphasis on engaging leadership with MSs (clause 5), and risk-based thinking (clause 6). In ISO 9001 the positive impact of change management (clause 6.3), knowledge management (clause 7.1.6), and service outsourcing (clause 8.4) were highlighted. In ISO 14001, the outstanding contribution to sustainability was the inclusion of the life cycle perspective for products and services, a requirement that all companies agree on is quite complex because it involves the mapping and analysis of the entire supply chain.

Finally, the case studies allowed identifying that companies in Spain are generally more advanced in CS than those operating in Portugal and Brazil. Although Portugal and Spain must comply with Directive 2014/95 on the disclosure of socio-environmental, the managers of Portuguese companies recognize that the country's legislation regarding environmental impacts is not as advanced as that of other countries in the European economic bloc, which causes them to react more slowly in this respect (European Union, 2014). Further, although in Brazil companies are not obliged to publish about their socio-environmental performance as in Portugal and Spain, there is a great commitment to doing so primarily as a strategy for mitigating the risks that could compromise the sustainability of the business. Thus, the managers of companies F and G highlighted that the inclusion of the management of socio-environmental risks in the strategy of organizations is a factor that has accelerated the development of sustainability in the agenda of Brazilian companies.

4 | GUIDELINES FOR ALIGNMENT OF SUSTAINABILITY WITH INTEGRATED MANAGEMENT SYSTEMS

As a result of the discussions, Figure 3 shows the proposition of 10 guidelines to assist the development of CS from IMS. The guidelines were developed based on the synergies and dissonances identified in the literature and verified in the case studies.

4.1 | Managing resources and demands of CS and IMS in a systemic and integrated way

In line with Ivanova et al. (2014) and Nunhes et al. (2020), it was empirically verified in companies A, B, and D that the lack of engagement of top management and IMS managers with sustainability may be reflected in difficulties in implementing sustainability in operations due to the unbalanced investments in the economic, social and environmental pillars. For this reason, greater awareness and dialog on CS is recommended in the organization's transversal areas, among which is IMS. Thus, IMS managers and employees should be directly responsible for the sustainable management of the business, informing the CS manager and top management of decisions and situations that jeopardize the organization's coherence concerning the sustainability strategy and aligning internal and external actions for sustainable business development. It is further recommended that both IMS and CS are fully integrated into decision-making (Asif et al., 2011). To this end, a sustainability committee should be created with the participation of those responsible for the CS and IMS to advise the board of directors on the risks, strategies, impacts, and developments of the sustainability strategy in the organization, with emphasis on their impacts on IMS. In this sense, the sustainability committee should value the balanced development of the CS pillars in the IMS (Nunhes et al., 2019, 2020). Furthermore, IMS provides comparable historical data to partially evaluate the sustainability performance over the years, as observed in the companies studied. Based on this, an overall performance evaluation is suggested, including the IMS performance evaluation in the CS performance evaluation. This action enables the systemic and balanced management of the organization's resources, which is important for developing both sustainability and the IMS (Isaksson & Steimle, 2009; Souza & Alves, 2018). Hence, IMS is suggested to act synergistically to improve governance and sustainability processes since its integrated management infrastructure helps increase transparency and decrease distances between areas, as well as to mitigate conflicts between economic, social, and environmental interests (Machado et al., 2021; Naomi et al., 2016; Souza & Alves, 2018).

4.2 | Defining strategies to identify and engage stakeholders with CS

In companies A, B, E, F, and G IMS provides the creation of a collaborative environment with various stakeholder groups, thus the institutionalization of a stakeholder-oriented strategy of sustainability can synergistically receive support from IMS (Hahn, 2012; Souza & Alves, 2018). The employees involved in the IMS activities should be oriented to promote the engagement of the stakeholders closest to their areas of operation with the sustainability strategy of the organization. This process, however, needs to be customized according to the main impacts (positive and negative) that each stakeholder has or may have on the organization and its issues, interests, concerns, and expectations. In this way, customized engagement and cooperation actions are recommended for each type of audience, prioritizing stakeholders

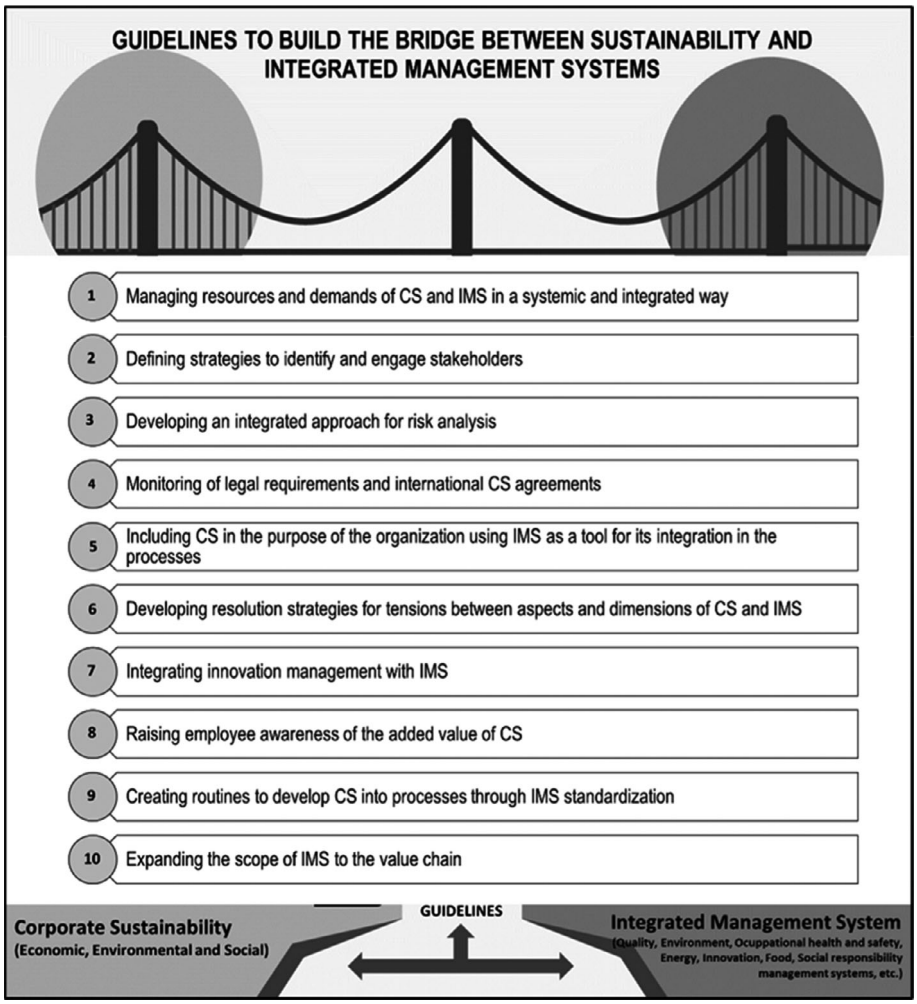
GUIDELINES TO BUILD THE BRIDGE BETWEEN SUSTAINABILITY AND INTEGRATED MANAGEMENT SYSTEMS
1 Managing resources and demands of CS and IMS in a systemic and integrated way
2 Defining strategies to identify and engage stakeholders
3 Developing an integrated approach for risk analysis
4 Monitoring of legal requirements and international CS agreements
5 Including CS in the purpose of the organization using IMS as a tool for its integration in the processes
6 Developing resolution strategies for tensions between aspects and dimensions of CS and IMS
7 Integrating innovation management with IMS
8 Raising employee awareness of the added value of CS
9 Creating routines to develop CS into processes through IMS standardization
10 Expanding the scope of IMS to the value chain
Corporate Sustainability
(Economic, Environmental and Social)
GUIDELINES
Integrated Management System
(Quality, Environment, Occupational health and safety, Energy, Innovation, Food, Social responsibility management systems, etc.)

FIGURE 3 Guidelines for CS alignment with IMS

that may be adversely impacted by their decisions and activities (Diaz-Sarachaga, 2021; GRI, UNGC, WBCSDS, 2019). Following the example of companies, A, B, C, F, and G, the use of existing communication channels in IMS such as meetings, audits, e-mails, evaluation forms, codes of conduct, etc. is suggesbted to promote the engagement of stakeholders sch as customers, suppliers, and employees. These actions, however, do not exclude the need to create communication channels exclusively dedicated to CS, such as a space dedicated to CS on the organization's website, the newspaper for employees, and sustainability reports (He et al., 2021; Maas, 2016; Nunhes et al., 2020).

4.3 | Developing an integrated approach for risk analysis

Identifying and managing current and potential negative and positive impacts related to risks on the sustainable development of the organization in an integrated manner is recommended to sustain the systemic management suggested in the guideline "Manage resources and demands of CS and IMS in a systemic and integrated way." As observed in companies A, E, and G, the IMS manager is recommended to act in partnership with the CS manager in the evaluation of impacts, and identification of priorities that will guide the organization's strategy. The process of integrated risk management must have a robust governance structure, composed of committees, policies, norms, and procedures, which allows risks to be duly identified, measured, mitigated, followed up, and reported (Carvalho et al., 2020; Nunhes et al., 2016). This risk analysis must consider the interdependence between economic, environmental, and social risks, knowing that eventual failures in any of these dimensions of sustainability may cause losses to others. Corroborating the findings of Lloret (2016), industrial companies have usually focused on controlling environmental risks through the development of resource conservation strategies, for example, waste and energy reduction, which enable them to reduce costs. Faced with this reality, greater attention should be paid to the management of risks related to the social dimension of sustainability, which can generate economic impacts as significant as the environmental ones. The management of social risks is in part included in the occupational health and safety management system, so the IMS can provide partial support in this process. However, several other social aspects transcend the limits of the organization that is not normally contemplated in OHSMS. Therefore, the use of complementary guidelines such as SA8000, ISO 26000, and GRI 400 is recommended for managing risks

related to human rights, impacts on society, and product liability (Nunhes et al., 2020; Rebelo et al., 2014).

4.4 | Monitoring of legal requirements and international CS agreements

Sustainability must be developed throughout the value chain and, to this end, customers and suppliers at more advanced stages of CS should work in cooperation with their stakeholders, who will increasingly demand compliance with laws and codes of conduct to prevent the occurrence of undesirable events (Souza & Alves, 2018). Companies with more mature IMS are committed to complying with laws and regulations on quality, environment, occupational health and safety, human rights, among others, in addition to being committed to the impacts of their products and services on society (Poltronieri et al., 2019). Nevertheless, an IMS that contributes to sustainable development should go beyond the adequacy of local, regional, and national laws and regulations and should, as far as possible, meet the expectations of sustainable development in countries where its stakeholders operate. As observed in companies F and G, even when operating in countries with more lenient CS legislation, companies must adopt an anticipated posture to comply with laws and agreements in force in the countries where their customers and suppliers operate. This is a way to manage socio-environmental risks that may compromise the sustainability and survival of the organization in the long term. Therefore, the scope of the IMS legal requirements analysis should be expanded to include periodic analysis of laws and CS agreements that impact or may impact not only the organization itself but also its suppliers and customers.

4.5 | Including CS in the purpose, mission, and vision of the organization using IMS as a tool for its integration in the processes

Motivations for implementing CS and IMS are mainly market-oriented and value-based; that is, the reason for implementation usually arises from an external need to meet the requirements of clients, investors, and legislation (Baumgartner & Rauter, 2017; Bernardo et al., 2015). Nevertheless, according to Domingues et al. (2015), generally better results can be achieved when the implementation of CS and IMS is driven by internal motivation, that is, when the organization has incorporated in its purpose, mission, and vision to act responsibly toward all its stakeholders, as verified in companies A, B, E, F, and G. From this, in line with Nunhes et al. (2020), companies are recommended to rethink the way they do their business, to include CS in the corporate agendas defining short, medium and long-term actions for its development. To do so, using IMS in the operationalization of the CS strategy is recommended, and an initial diagnosis is required to identify the actions already implemented that contribute to CS in IMS and the actions that need to be included in the system.

4.6 | Developing resolution strategies for tensions between CS and IMS

The use of the synergistic relations between IMS and CS presented throughout this study requires the alignment of the strategic planning of these two elements. As observed in all companies studied, the multifaceted nature of the CS and IMS can generate tensions between structures, processes, objectives, and responsibilities, which need to be adequately evaluated and addressed to support the alignment of IMS with the CS. The guidance given previously regarding systemic management in the guideline "Manage resources and demands of CS and IMS in a systemic and integrated way", mainly the creation of the CS and IMS committee, can help resolve these tensions. However, the first step in managing these tensions is to recognize that they exist and understand why they exist. Once this is done, means must be proposed to make the paradox a manageable situation that satisfactorily meets both sides (Hahn et al., 2015). For example, in the companies studied the IMS planning contemplates in its majority short and medium-term actions, which diverge from some CS goals that are inevitably fixed for long-term achievement. Therefore, the compatibility of the time horizon for the achievement of IMS and CS objectives and goals is recommended not only to promote alignment itself, but also the continuous improvement of IMS.

4.7 | Integrating innovation management with IMS

As mentioned throughout this work, elements that impact the CS must be included in the IMS. Innovation is one of these elements and therefore its integration with IMS is recommended (Bernardo, 2014; Hernandez-Vivanco et al., 2018). Continuous innovation is essential for organizations to produce value, remain competitive, and be able to respond to increasingly dynamic and demanding markets (Nicolăescu et al., 2015; Tyagi et al., 2015). The alignment of IMS with the CS can be understood as a proposal of incremental innovation, in which IMS helps to gradually promote the exchange of experiences between employees for more sustainable management (Holm et al., 2014). The companies that presented innovation management processes with the highest degree of maturity were A, D, E, and G. Following the example of these companies, investments in innovation are suggested for the sustainable development of products and processes, inserting innovation for sustainability in projects of circular economy and digital transformation. The IMS should help this process by giving direct inputs from production processes, customers, and suppliers so that the management of innovation is guided by the real needs of the organization (Hernandez-Vivanco et al., 2018; Scarpellini, 2021). The IMS environmental management area, for example, can provide significant support to R&D processes to obtain environmental improvements to enable a circular economy, as observed in company A. The integrated management of health and safety at work may contribute to the development of the social dimension from the implementation of technologies that promote the well-being and health of employees (company A) and customers (company G). Finally, the creation of idea management

programs is recommended so that employees from different levels and areas can identify opportunities for continuous improvement and sharing of best practices between CS and IMS (Droege et al., 2021; Hojnik et al., 2021; Isaksson & Steimle, 2009; Luo et al., 2015; Marques et al., 2018; Santos et al., 2020; Yülek & Santos, 2022).

4.8 | Raising employee awareness of the added value of CS

The development and satisfaction of people are fundamental factors for the sustainability of the company because the execution of the strategy depends on them. Thus, the development of CS elements from IMS in organizational and decision processes (e.g., in descriptions of functional specifications, criteria for selecting suppliers, eco-design principles) depends, before anything, on the internal acceptance of the employees that CS is an indispensable added value for the perenniality of the organization. The incorporation of the CS in the tasks and routines of the IMS collaborators makes it necessary to awaken in these people an awareness of the importance of the sustainability strategy, highlighting the responsibilities and contributions of each one to achieve good results. Those responsible for human resource management are recommended to conduct training, internal campaigns, and events to raise awareness and train employees about sustainability. In addition, following the example of companies A and G, an annual internal climate assessment is recommended to measure employee satisfaction with strategic issues, including sustainability. Feedbacks from climate assessment should result in actions to improve the worst evaluated elements. Therefore, the institutionalization of CS should be dynamic and humane, allowing the interaction and contribution of IMS employees to feel part of the process. The sustainability and IMS committee should be open to answering questions that may arise about the relations of employees with elements, structures, and routines of CS (Asif et al., 2009). In addition to the committee itself, working groups may be assigned with the responsibility of spraying CS values into the IMS and organization as a whole, as observed in companies A, E, and G.

4.9 | Creating routines to develop CS into processes through IMS standardization

The SDCA cycle (Standard, Do, Check, Act) assists in standardizing good IMS results to allow their consistent replication, thus reducing variability between systems and reducing costs and waste (Nunhes et al., 2019). The use of the SDCA cycle can assist the development of CS by making the planned changes using IMS structures and routines (Asif et al., 2009; Nunhes et al., 2019). The knowledge obtained using IMS should give full support to the initial development of sustainability management, assisting, for example, the creation of audit processes, process and document management, performance evaluation, continuous improvement, among other, as observed in companies A, E, F, and G. Therefore, for the development of CS activities at the tactical and operational levels, the creation of "Standard works" is suggested, as well as a lean initiative of task standardization to transmit, clearly and consistently, the best practices of IMS execution that can support CS. With this, one expects to obtain better use of experiences, reduce possible errors, and stabilize the CS processes. As observed in company A, the "work standards" represent the know-how acquired over time by the organization, being the basis for all improvement processes, such as the alignment of IMS with CS.

4.10 | Expanding the scope of IMS to the value chain

The next steps of IMS as a sustainability developer are recommended to manage the socio-environmental aspects beyond the company's internal boundaries through its integration with the value chain. IMS processes should be designed from the perspective of a circular economy to meet the various sustainability requirements defined by the organization as observed in companies A, B, D, E, and G. In this way, IMS should operate the transversal development of sustainability elements (see details in Nunhes et al., 2020) through its integration with commonly integrable elements such as high-management responsibility, work instructions, control of documents and records, internal communication and structure and accountability (Nunhes et al., 2017). The guidelines of this study address the alignment of these and other elements of IMS with CS along the value chain and in a life cycle perspective (Todaro et al., 2019). Namely, guideline 4.1 guides the alignment of the high management responsibility element, guideline 4.9 addresses the alignment of routine elements such as document management, and guidelines 4.1 and 4.2 deal with the alignment of internal communication, structure, and accountability.

5 | CONCLUSIONS

This study aimed to propose guidelines for an integrative approach to sustainability and IMS. This objective was achieved through the identification of synergistic and dissonant aspects between the two themes verified in the literature and in seven case studies in Ibero-American companies, which enabled the guidelines to be proposed. Throughout Section 4, synergies, and dissonances between sustainability and IMS were presented and discussed, which can occur in several environments of the organization, potentiating or hindering the implementation of frameworks for alignment and integration of these elements. Among the synergies and dissonances identified and analyzed in this work, some specific conclusions should be thoroughly investigated to support the development of sustainability from the IMS.

First, both sustainability and IMS should not function as a department, but as a cross-cutting corporate area, with objectives strategically defined by a single committee composed of diverse leaderships. Another important aspect of the alignment strategy of sustainability with IMS is the creation of short, medium, and long-term planning in

both areas, using synergistic objectives to minimize the potential conflicts. These are the first steps to create a synergistic and integrated path of sustainability with IMS since the strategy of developing sustainability from the IMS will be promoted in the leaderships of the various types of business. Future studies can explore the necessary criteria for creating a transversal corporate area of IMS and sustainability, adapting the complexity of the structure, characteristics of the strategy, and focus according to the sector and size of the organizations.

Second, the guidelines proposed showed it is possible to use IMS for what would be the main function of sustainability management: to promote the achievement of sustainable development objectives and to channel and report the results regarding economic, social, and environmental performance. In line with Landrum and Ohsowski (2018) and Lüdeke-Freund et al. (2018), it is concluded that the IMS with the highest degree of maturity can provide this structure necessary for fulfilling the CS objectives through the joint and coordinated use of resources, referring to the social, economic and environmental dimensions of sustainability simultaneously. The IMS, when well internalized in the companies, that is, when endowed with a certain degree of maturity, helps increase transparency and decrease distances between areas, as well as softening conflicts between interests between economic, social, and environmental issues. As it is a cross-country analysis, the importance of creating laws and incentives to mobilize companies to develop sustainability in their businesses and promote it throughout their value chain was realized.

Due to the delimitation established in the project of this research, the present work has as a main limitation the study of large companies with operations in Portugal, Brazil, and Spain. Therefore, future studies could expand the variables of analysis, including the study of companies operating in other countries, sectors, and small and medium-sized companies and proposing frameworks with specific guidelines adapted to these contexts. Future studies could also use other research methods to validate the results presented, such as statistical and documentary analysis. Future studies could also use other research methods to validate the results presented, such as statistical and documentary analyses; or even studies that include ISO 26000, due to the external social character that this standard represents, providing even more accurate results in the sustainability universe.

Finally, it is concluded that building the bridge to develop more sustainable strategies and operations using IMS is, above all, a strategic decision that requires the transposition of barriers to which the guidelines of this work have been proposed. This work brought as a scientific contribution the upgrade of the block of knowledge on the contributions of IMS to CS and vice-versa, bringing some validation of knowledge from scientific articles in the real context of industrial companies, and additions and refinements to the state of the art on the subject. In addition, the applied contribution of the results stands out, which will support managers for adjustments in the organizational structure that will make them more green, just, and prosperous, thus promoting the achievement of the global sustainable development goals proposed in Agenda 2030.

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APPENDIX A

TABLE A1 Synergies and dissonances CS Pillar 1—Sustainable corporate governance

Cross-ref. IMS pillars	Synergies and dissonances	Verified in	
		Literature	Case studies
IMS2 standardization	S1—The proper functioning and sustainability of the governance system and the IMS depend on the existence of well-defined management structures and procedures (Asif et al., 2011; Souza & Alves, 2018).	X	All companies
IMS6 continuous improvement	S2—It is important to adopt good governance and IMS practices recommended by institutions and external bodies that aim to promote corporate sustainability (Rebelo et al., 2016).	X	All companies
IMS6 continuous improvement	S3—The sustainability committee has responsibility for monitoring sustainability and IMS performance and accountability (Siva et al., 2016).	X	A, B, D, E and G
IMS3 strategic, tactical and operational and IMS4 organizational learning	S4—Risk analysis related to business sustainability is an important governance activity that can receive inputs from IMS risk analysis (Rebelo et al., 2016).	X	All companies
IMS1 systemic management	S5—Both IMS and CS need to be fully integrated in decision making (Asif et al., 2011), and there may be a single committee to discuss sustainability and IMS issues in the governance meetings.	X	A, B and D
IMS3 strategic, tactical and operational and IMS6 continuous improvement	S6—The governance concerned with sustainability has a compliance system less driven by laws and more driven by internal strategy (Pina & Polo, 2017; Siva et al., 2016). This internal motivation can contribute to IMS continuous improvement (Bernardo et al., 2015).	X	A, B, C, E and G
IMS6 Continuous improvement	S7—IMS supports the organization's accountability via an improved transparency and interaction with various stakeholder groups (Hahn, 2012; Jaďuďová et al., 2015).	X	A, B, C, E, F
IMS1 systemic management and IMS5 debureaucratization	S8—Governance conflicts of interest on economic, environmental, and social constraints can jeopardize proper prioritization and allocation of resources for implementing sustainability and IMS business strategies (Nunhes et al., 2019) and TBL equilibrium (Naomi et al., 2016; Tate & Bals, 2016).	X	A, B, C, D and F
IMS1 systemic management	S9—Companies face difficulties in critically define the necessary efforts to achieve more sustainable results and this lack of guidance is reflected in the IMS.		A, B, D and F
IMS2 standardization	S10—As the IMS, the sustainable governance should follow standardized procedures because standardization enhances transparency and accountability (Joyce & Paquin, 2016; Santos et al., 2018).	X	A, B, C and D
IMS1 systemic management, IMS3 strategic, tactical and operational and IMS6 continuous improvement	D1—The governance body periodically conducts materiality analysis and discusses sustainability topics relevant to the business, however, the results obtained are not directly used as input for improving the IMS.		All companies
IMS1 systemic management and IMS3 strategic, tactical and operational	D2—There are different perspectives of time for CS and IMS (Ortiz-de-Mandojana et al., 2019; Rocha et al., 2007). IMS1 Systemic management and IMS3 Strategic, tactical and operational	X	A, B, C and F

TABLE A2 Synergies and dissonances CS Pillar 2—Corporate sustainability strategy

Cross-ref. IMS pillars	Synergies and dissonances	Verified in	
		Literature	Case studies
IMS4 organizational learning	S11—Information from IMS can be useful for the strategic planning of CS (Asif et al., 2011).	X	All companies
IMS1 systemic management	S12—CS and IMS need strategies for the management of tensions (Nunhes et al., 2019; Tate & Bals, 2016).	X	All companies
IMS1 systemic management	S13—Risk management is important for defining the sustainability (Wolf, 2014) and IMS (Rebelo et al., 2017) strategies.	X	All companies
IMS3 strategic, tactical and operational	S14—Top management should support the development and implementation of sustainability and IMS strategies (Asif et al., 2011).	X	All companies
IMS1 systemic management	S15—The strategic and integrated vision of sustainability and IMS can help combat competing subcultures within the organization (Jorgensen, 2008; Naomi et al., 2016).		B, C, D, E and G
IMS2 standardization and IMS3 strategic, tactical and operational	S16—The creation of IMS internal standards could give support to sustainability integration throughout the organization (Büyüközkan & Karabulut, 2018)	X	A, B, C, F and G
IMS5 debureaucratization	S17—IMS best practices can be used to simplify and cut red tape in sustainability activities (Asif et al., 2011).	X	A, D, F and G
IMS6 continuous improvement	S18—The lack of integration of the CS and IMS continuous improvement plans makes it difficult to achieve the strategic objectives		A, B. D and F
IMS1 systemic management	S19—Motivations for implementing CS and IMS are mainly market-oriented and value-based (Baumgartner & Rauter, 2017; Bernardo et al., 2015)	X	A, B, C, D and F
IMS1 systemic management	D3—IMS helps to develop sustainability, but not in a balanced way, as the IMS strategy in general is limited to the internal environment while the sustainability strategy considers both the internal and external environments (Souza & Alves, 2018).		All companies
IMS4 organizational learning	D4—Companies do not know how to take advantage of their experience with standardized MSs to strategically integrate CS into their core business processes (Asif et al., 2011).	X	A, B, C, D and F
IMS1 systemic management	D5—IMS usually does not consider product and process life cycle management variables (Jorgensen, 2008).	X	A, B, C, D and F

TABLE A3 Synergies and dissonances CS Pillar 3—Sustainable management of human resources

Cross-ref. IMS pillars	Synergies and dissonances	Verified in	
		Literature	Case studies
IMS4 organizational learning and IMS6 continuous improvement	S20—Human resources are fundamental drivers for CS and IMS performance (Kiesnere & Baumgartner, 2019; Savino & Batbaatar, 2015).	X	All companies
IMS3 strategic, tactical and operational and IMS4 organizational learning	S21—HR team conducts internal campaigns to disseminate topics related to sustainability and IMS (Delai & Takahashi, 2013; Rebelo et al., 2014).	X	A, B, C, D and F
IMS6 continuous improvement	S22—It is important for the development of sustainability and IMS that HR management follow laws, recommendations and guidelines for human rights and social responsibility (Delai & Takahashi, 2013; Nunhes et al., 2019).	X	All companies
IMS2 standardization, IMS4 organizational learning and IMS5 debureaucratization	S23—The company provides education and training for employee empowerment and excellence in CS and IMS activities (Asif & Searcy, 2014; Delai & Takahashi, 2013).	X	All companies
IMS1 systemic management	S24—Top management participate in CS and IMS training planning to guarantee that it is in accordance with company's needs (Pina & Polo, 2017; Rebelo et al., 2014).	X	B
IMS4 organizational learning	S25—The adoption of innovation in the context of CS and IMS brings feelings of uncertainty and maintaining the status quo in employees (Kiesnere & Baumgartner, 2019; Nunhes et al., 2019).	X	A, B and F
IMS4 organizational learning	D6—The promotion of gender diversity, thoughts, skills and experiences is important for the development of sustainability (Delai & Takahashi, 2013) but it is not verified in the IMS.		A, B and C
IMS2 standardization, IMS4 organizational learning and IMS5 debureaucratization	D7—Employees from a subculture with a stronger emphasis on hierarchical and bureaucratic values such as IMS have a higher emphasis on understanding CS as economic sustainability (Linnenluecke et al., 2009).	X	All companies

TABLE A4 Synergies and dissonances CS Pillar 4—Sustainable knowledge and innovation management

Cross-ref. IMS pillars	Synergies and dissonances	Verified in	
		Literature	Case studies
IMS4 organizational learning	S26—Sustainability and IMS influences the planning of innovation management activities (Fonseca & Carvalho, 2019; Holton et al., 2010).	X	A, B, C and D
IMS6 continuous improvement and IMS3 strategic, tactical and operational	S27—When IMS is flexible it could allow the incorporation of new concepts, products and sustainable technologies in the organization (Rebelo et al., 2014)	X	A, B and C
IMS4 organizational learning	S28—IMS promotes greater knowledge sharing among employees, which facilitates the integration of sustainability in the organization (Holm et al., 2014).	X	C and D
IMS4 organizational learning	S29—CS and IMS need adaptation to the environment of innovations and constant updates in the needs of stakeholders (Holm et al., 2014; Rebelo et al., 2014).	X	All companies
IMS6 continuous improvement	S30—Management idea programs can help identify opportunities for continuous improvement of the existing CS and IMS patterns (Isaksson & Steimle, 2009; Luo et al., 2015).	X	A and D

(Continues)

TABLE A4 (Continued)

Cross-ref. IMS pillars	Synergies and dissonances	Verified in	
		Literature	Case studies
IMS3 strategic, tactical and operational and IMS4 organizational learning	S31—The sustainability culture and values influences IMS and promotes integration (Naomi et al., 2016; Rocha et al., 2007).	X	C and D
IMS4 organizational learning	D8—There is no integration or sharing of best practices between CS and IMS (Isaksson & Steimle, 2009).	X	B, C and D
IMS1 systemic management and IMS3 strategic, tactical and operational	D9—The innovation management system is usually separated from other management systems, not fully integrated neither with sustainability nor with IMS.		All companies

TABLE A5 Synergies and dissonances CS Pillar 5—Measurement, disclosure and independent assurance of corporate sustainability

Cross-ref. IMS pillars	Synergies and dissonances	Verified in	
		Literature	Case studies
IMS2 standardization	S32—Standards and recommendations for the development of sustainability (Büyüközkan & Karabulut, 2018) and IMS (Rebelo et al., 2017) are used.	X	All companies
IMS3 strategic, tactical and operational	S33—IMS assists in the preparation of the sustainability report that is subject to external verification because it presents a set of performance indicators with minimum requirements in the areas of TBL (Asif et al., 2011).	X	All companies
IMS2 standardization, IMS3 strategic, tactical and operational and IMS4 organizational learning	S34—IMS provides comparable historical data for partially assess sustainability performance over the years (Asif et al., 2011).	X	All companies
IMS3 strategic, tactical and operational	S35—IMS auditing is a practice that gives greater confidence to the information disclosed in the sustainability reports (Asif et al., 2011).	X	All companies
IMS1 systemic management	S36—Overall performance is needed to assess both CS and systemic management of IMS (Isaksson & Steimle, 2009; Souza & Alves, 2018).	X	A, B, C and D
IMS2 standardization and IMS6 continuous improvement	S37—Standardization added to the ability to managing risks and changes can improve CS and IMS performance and transparency (Holm et al., 2014).	X	All companies
IMS6 continuous improvement	D10—The performance evaluation of the IMS itself is not able to demonstrate CS performance (Büyüközkan & Karabulut, 2018).	X	All companies

TABLE A6 Synergies and dissonances CS Pillar 6—Sustainable management systems and integrated management systems

Cross-ref. IMS pillars	Synergies and dissonances	Verified in	
		Literature	Case studies
IMS1 systemic management	S38—CS and IMS are focused on meeting the needs and expectations of various stakeholders (Hahn, 2012; Jaďuďová et al., 2015).	X	A, B, C and D
IMS2 standardization and IMS5 debureaucratization	S39—IMS makes it possible to create routines to integrate CS into processes through standardization of terms, tools and processes as done in IMS. This can simplify sustainability management (Asif et al., 2011)	X	A, B, C and D
IMS6 continuous improvement	S40—IMS continuous improvement actions can positively impact sustainability and vice-versa (Asif et al., 2011)	X	A, B, C and D
IMS2 standardization	S41—Companies follow international standards and guidelines to develop CS and IMS (Asif & Searcy, 2014; Santos et al., 2018)	X	A, B, C and D
IMS3 strategic, tactical and operational	S42—CS approaches should consider integration with core business processes such as IMS (Siva et al., 2016)	X	A, C and D
IMS4 organizational learning and IMS6 continuous improvement	S43—Sustainability learning and innovation is important for IMS continuous improvement (Asif et al., 2011).	X	A, B, C and D
IMS1 systemic management and IMS4 organizational learning	D11—There is little openness, dialog and synergy between transversal areas of IMS and CS (Delai & Takahashi, 2013)	X	A, B, C and D
IMS6 continuous improvement	D12—In order for the IMS to contribute to sustainability, it is necessary to go beyond meeting legal requirements and traditional management system standards (Pina & Polo, 2017; Rebelo et al., 2014; Siva et al., 2016)	X	A, B, C and D
IMS5 debureaucratization	D13 –Separated management structures for CS and IMS result in overlapping requirements (Mustapha et al., 2017).	X	A, B and C
IMS3 strategic, tactical and operational	D14—Unlike IMS, sustainability management is a set of disconnected practices (Delai & Takahashi, 2013).	X	A, B and C
IMS3 strategic, tactical and operational	D15—Sustainability objectives are more strategic and IMS objectives are more operational (Rebelo et al., 2014).	X	A, B, C and D